FINAL PROPOSED PLAN OPERABLE UNIT 4 (OU4) SOLID WASTE MANAGEMENT UNIT 5 (SWMU5) NSY PORTSMOUTH ME

2/1/2013

U S NAVY

Proposed Plan

Operable Unit 4

Portsmouth Naval Shipyard, Kittery, Maine

The Cleanup Proposal

This Proposed Plan has been prepared, in accordance with federal law and the Federal Facility Agreement for Portsmouth Naval Shipyard (PNS), to present the Navy's preferred approach for addressing contaminated sediment at Operable Unit (OU) 4, PNS, Kittery, Maine. OU4 includes Site 5 – the Former Industrial Waste Outfalls and six areas of concern (AOCs). Past contamination from Site 5 is addressed as part of the Dry Dock AOC. Monitoring stations (labeled MS-01 to MS-14) provide coverage of the offshore AOCs and the remedial alternatives for OU4 were evaluated for the monitoring stations or for groups of nearby monitoring stations.

After careful study, the Navy, with concurrence from the United States Environmental Protection Agency (EPA), proposes to remove contaminated sediment and dispose of the sediments off-yard for MS-01, MS-03, MS-04, MS-12, and proposes no further action for MS-02, MS-05, MS-06, MS-07, MS-08, MS-09, MS-10, MS-11, MS-13, and MS-14. With the implementation of final remedies at OU4, interim offshore monitoring will be discontinued.

This plan provides information on the remedial alternatives evaluated for impacted sediment, the public comment period, the public informational open house and public hearing, and how the final remedy for OU4 will ultimately be selected.

LET US KNOW WHAT YOU THINK

Mark Your Calendar!

Public Comment Period

February 27, 2013 to March 28, 2013

The Navy will accept comments on this Proposed Plan for OU4 during this comment period. You do not have to be a technical expert to comment. To provide formal comments, you may offer oral comments during the public hearing or provide written comments at the informational open house, at the public hearing, or by fax or mail. Send written comments postmarked no later than March 28, 2013, to:

Ms. Danna Eddy, Public Affairs Office (Code 100PAO),
Portsmouth Naval Shipyard,
Portsmouth, New Hampshire 03804-5000

Fax: (207) 438-1266

Informational Open House and Public Hearing

March 13, 2013

The Navy invites you to attend an informational open house from 7:45 pm to 8:15 pm to learn more about the proposed OU4 cleanup plan and how it compares with other cleanup options for the site. The informational session will include posters describing the Proposed Plan, and an informal question and answer session. A formal public hearing will follow from 8:15 to 8:45 pm, in which the Navy will receive comments on the Proposed Plan from the public. It is at this formal hearing that an official transcript of the comments will be recorded. The above activities will be held at the *Kittery Town Hall in Kittery, Maine*.

*Federal and state environmental laws govern cleanup activities at federal facilities. A federal law called the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, better known as Superfund, provides procedures for investigation and cleanup of environmental problems. Under this law, the Navy is pursuing cleanup of designated sites at PNS to return the property to a condition that protects the community, workers, and the environment.*

Technical terms used throughout this Proposed Plan are explained in the Glossary of Terms on Page 20

INTRODUCTION

This Proposed Plan provides information on the preferred approaches for addressing contaminated sediment at OU4 and provides the rationale for this preference. In addition, this plan includes summaries of other cleanup alternatives evaluated for use at OU4. This document is issued by the Navy, as the lead agency for all investigation and cleanup programs ongoing at PNS, and EPA, with the concurrence of the Maine Department of Environmental Protection (MEDEP). The Navy and EPA, in consultation with MEDEP, will select the final remedies for OU4 after reviewing and considering all information submitted during the 30-day public comment period and may modify the preferred alternatives or select another response action presented in this plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives presented in this Proposed Plan.

The Navy is issuing this Proposed Plan as part of its public participation responsibilities under Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. The Proposed Plan summarizes information that can be found in greater detail in the Rounds 1 through 10 Interim Offshore Monitoring Program Report, the **Feasibility Study (FS)** Report for OU4, and other documents included in the PNS Information Repositories, located at the Rice Public Library in Kittery, Maine, and the Portsmouth Public Library in Portsmouth, New Hampshire. Documents are also available on the Navy's public website for PNS. The Navy and EPA encourage the public to review these documents to gain a more comprehensive understanding of the site and associated environmental activities. Please refer to the Next Steps section on Page 19 for location and contact information for these facilities.

The purposes of this Proposed Plan are to:

- Provide the public with basic background information about PNS and OU4. This information includes a description of the operable unit that was developed by reviewing past documents, investigating offshore media (surface water, sediment, and biota), and evaluating potential human and ecological impacts.
- Describe the cleanup options that were considered.
- Identify the Navy's preferred alternatives for remedial action at OU4 and explain the reasons for that preference.
- Provide the public information on how the public can be involved in the remedy selection process.
- Solicit and encourage public review of the Proposed Plan.

History of Site Investigations and Interim Actions

1983 through 1986 – Initial Assessment Study (IAS): Assessed and identified potential threats posed by the sites to human health and the environment. The final stage of this investigation was completed in 1986 with the release of the Final Confirmation Study (FCS). The FCS was conducted to evaluate the sites specified in the IAS to confirm the presence of contamination.

1989 through 1995 – Resource Conservation and Recovery Act (RCRA) Facilities Investigation (RFI): Consisted of several stages from October 1989 to February 1992 with the results compiled into the **RFI Report**. EPA issued the RFI "Approval with Conditions" in March of 1993, and the Addendum to the RFI Report was assembled to address the "Approval with Conditions." The RFI Data Gap Report, compiled in 1995, is supplemental to the RFI Report and presents the results of the field work.

1994 - The Human Health Risk Assessment (HHRA) and 1998 Phase I/Phase II Offshore Data Comparison: Potential exposure points and routes identified for human health included dermal contact with and ingestion of surface water and sediment, and ingestion of biota (lobster, mussels, and flounder) for the PNS offshore area. The results were used to evaluate human health risks for the offshore area.

1999 – Interim Record of Decision (ROD) for OU4: Required the Navy to conduct monitoring for the offshore area of PNS in the interim period before the FS is completed for the offshore area, and until the final remedy for OU4 is implemented.

2000 – Estuarine Ecological Risk Assessment (EERA): Sediment, surface water, and tissue samples were collected from the offshore area for various analyses/studies. The results of the analyses/studies were used to evaluate ecological risks for the offshore area.

2001 – Preliminary Remediation Goals (PRGs) for OU4: Identified risk-based chemical concentrations in sediment that are protective of sediment invertebrates.

1999 through 2011 – Interim Offshore Monitoring for OU4: A monitoring plan was developed and 11 rounds of sampling plus two additional scrutiny investigations were conducted from September 1999 through April 2011. The data from Rounds 1 through 4 were evaluated in the Baseline Report in 2002, and data from Rounds 1 through 7 were evaluated in the Rounds 1 through 7 Report in 2004. The data from the Phase I Additional Scrutiny Investigation were evaluated in the 2007 Additional Scrutiny Report. Data from Rounds 1 through 10 and the Phase II Additional Scrutiny Investigation were compiled and evaluated in the Rounds 1 through 10 Interim Monitoring Program Report in 2010. Data from Round 11 were evaluated in the Second Five-Year Review Report.

2012 – Feasibility Study (FS): Conducted to develop and evaluate potential cleanup alternatives for OU4.

After the public has had the opportunity to review and comment on this Proposed Plan, the Navy will summarize and respond to all significant comments received during the comment period in a Responsiveness Summary. The Navy and EPA, in consultation with MEDEP, will carefully consider all comments received and could even select remedies different from that proposed in this plan after appropriate additional opportunity for comment. Ultimately, the selected remedies for OU4 will be documented in a **Record of Decision (ROD)** for the site. The Responsiveness Summary will be issued with the ROD.

SITE BACKGROUND

PNS is a military facility with restricted access located on an island in the Piscataqua River. The Piscataqua River is a tidal estuary that forms the southern boundary between Maine and New Hampshire. PNS was established as a government facility in 1800, and served as a repair and building facility for ships during the Civil War. The first government-built submarine was designed and constructed at PNS during World War I. A large number of submarines have been designed, constructed, and repaired at this facility since 1917. PNS continues to service submarines as its primary military focus. Figure 1 shows the location of PNS, and Figure 2 shows the layout of PNS and OU4.

Where is OU4 within the Shipyard?

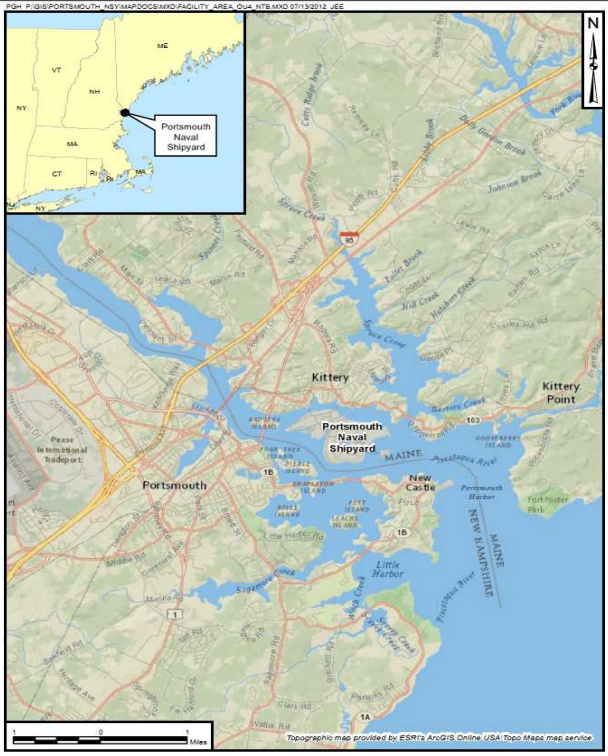
OU4 is the offshore area of the Piscataqua River and Back Channel around PNS potentially impacted by onshore IRP sites and Site 5 (former industrial waste outfalls). OU4 is a compilation of Site 5 and six AOCs. The AOCs are nearshore habitats adjacent to PNS that may have been affected by onshore Installation Restoration Program (IRP) sites. The six AOCs are: Clark Cove, Sullivan Point, Defense Reutilization and Marketing Office (DRMO) Storage Yard, Dry Docks, Back Channel, and Jamaica Cove. The AOC locations are shown on Figure 2. The conceptual site model of OU4 is shown on Figure 3.

Two IRP sites were considered sites that had offshore impacts but no onshore impacts: Site 5, Former Industrial Waste Outfalls; and Site 26, Portable Oil/Water Tanks. A No Further Action document was signed for Site 26; therefore, it is no longer included in OU4. Site 5 consisted of numerous discharge points along the Piscataqua River at the western end of PNS in the Dry Docks AOC. Use of these outfalls was discontinued in 1975. Past contamination from Site 5 is being addressed by the monitoring stations within the Dry Dock AOC.

As part of the Interim Offshore Monitoring Program, 14 monitoring stations were identified to provide coverage of the offshore AOCs for interim monitoring purposes. Four reference stations located in the Piscataqua River were also sampled to provide information about non-PNS impacted areas.

MS-01, MS-02, MS-03, and MS-04 are located in the Back Channel AOC. MS-01 is located in the western portion of the

Figure 1 - Vicinity Map



AOC, offshore of Site 34 (OU9) and adjacent to the bridge leading to Gate No. 1. Past disposal of ash at Site 34 is the likely source of elevated **polycyclic aromatic hydrocarbons (PAHs)** at OU9. Removal of the ash as part of the 2007 Site 34 removal action eliminated the IRP source of contamination at this station.

MS-02 is located between Topeka Pier and the bridge from Gate No. 2. There are no known IRP sites immediately onshore of MS-02. MS-03 and MS-04 are located in the eastern portion of the AOC, offshore of Site 32 (OU7). Foundry slag associated with fill material at Site 32 has been identified in the intertidal areas of MS-03 and MS-04, and is likely the source of elevated **metal** and PAH concentrations at those stations. Removal of surficial debris in the intertidal area and placement of shoreline erosion controls as part of the 2006 Site 32 removal action eliminated the IRP source of contamination to these monitoring stations.

MS-05 and MS-06 are located in the offshore area of OU3 in Jamaica Cove, and are adjacent to the wetland constructed as part of the remedy for OU3. As part of the remedy for OU3, contaminated soil adjacent to Jamaica Cove was excavated, and wetlands were constructed in the excavated area. Although there is no longer contaminated soil adjacent to Jamaica Cove, the excavation of contaminated soil resulted in the release of contaminants to sediment offshore of Jamaica Cove.

MS-07, MS-08, and MS-09 are all located in the Clark Cove AOC. MS-07 is located in a recreational area of the AOC, but is not immediately offshore of OU3. There are no known IRP sites immediately onshore of MS-07. MS-08 and MS-09 are located immediately offshore of OU3 in the AOC. The intertidal area near MS-08 was excavated as part of the OU3 remedial activities in 2004, and the excavated area was backfilled with clean material. As part of OU3 remedial activities, shoreline erosion controls were installed in the small intertidal areas that existed at MS-09 and the area was covered with riprap; therefore, there is no longer an intertidal area associated with MS-09.

MS-10 is located at the southeastern corner of PNS, within the Sullivan Point AOC. It is the only monitoring station in this area, and no previous activity is suspected to have led to contamination. There are no known IRP sites immediately onshore of MS-10.

MS-11 is located within the DRMO Storage Yard AOC. MS-11 is located in the main channel of the Piscataqua River, just offshore of OU2 (Sites 6 and 29). Past DRMO and waste disposal activities led to soil contamination at OU2. Physical movement of contaminated soil, such as snow plowing and erosion of contaminated soil, have resulted in contamination of the offshore area adjacent to OU2 in the past. Current erosion of contaminated soil is not occurring because of controls placed along the shoreline (in 1999 along Site 6 and in 2005, 2006, and 2008 along Site 29).

MS-12, MS-13, and MS-14, are located in the western section of PNS in the Dry Docks AOC. MS-12 is located adjacent to Building 178 and offshore of Sites 5 and 10. One likely source of contamination in the area is a former industrial waste outfall (Site 5) that reportedly discharged material during previous operations. There are no current IRP sources to MS-12. Other potential Navy sources of contamination exist at MS-12, including potential migration or transport from IRP sites or various boat, barge, and dock-side activities. MS-13 is located outside of a dry dock offshore of Sites 5 and 31. MS-14 is located in the westernmost part of the back channel to monitor sediment potentially impacted by Sites 5 and 31.

Figure 2 - Overview of Interim Offshore Monitoring Station Locations

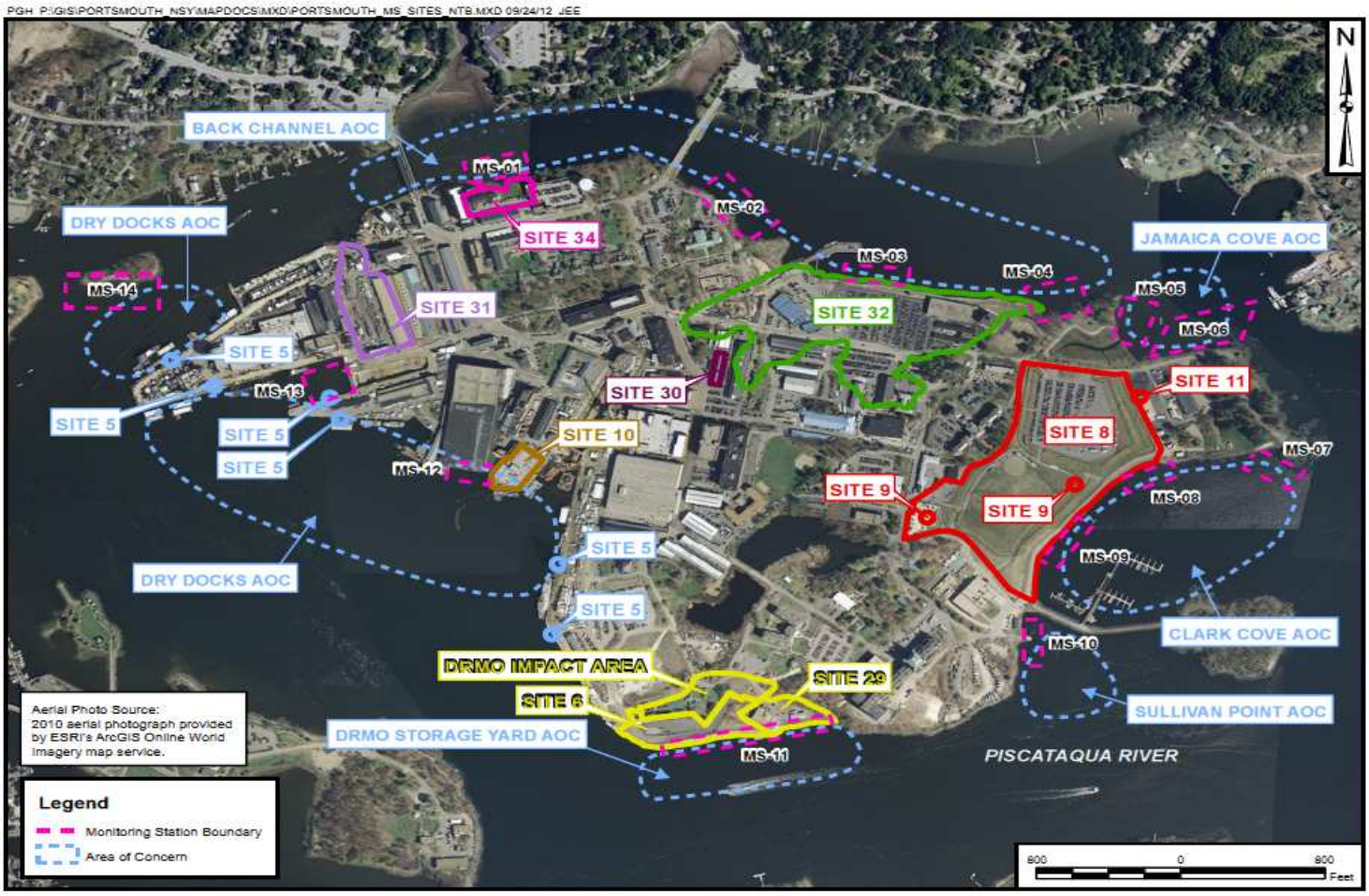
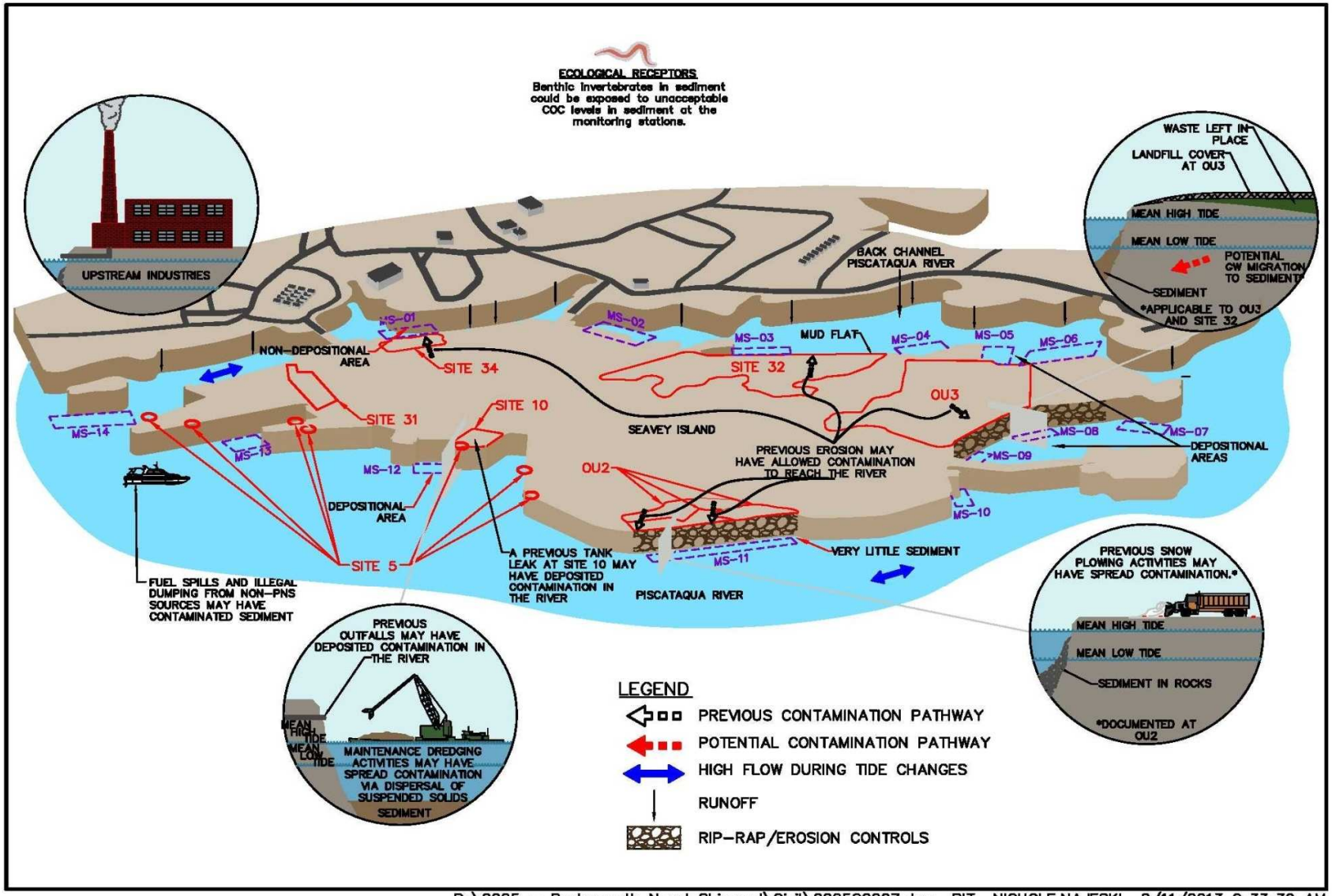


Figure 3 - Conceptual Site Model



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TECHNICAL TERMS USED THROUGHOUT THIS PROPOSED PLAN ARE EXPLAINED IN THE GLOSSARY OF TERMS ON PAGE 20

For what was OU4 used?

The Shipyard uses the offshore area for boat docks and piers as well as for vessel transport as part of Shipyard operations. The Piscataqua River and Back Channel near PNS are also used for non-Navy activities including commercial and recreational boat traffic and discharge from municipal and industrial operations or treatment plants.

What is the current and future land use at the site?

OU4 is the area offshore of PNS; therefore, its uses would be those that occur in the Piscataqua River. Current uses of the Piscataqua River include commercial and recreational activities such as boating, fishing, and lobstering. Future uses are expected to remain the same.

SITE CHARACTERISTICS

What does OU4 look like?

In OU4, the offshore area of PNS, there are boat docks, piers, and various habitats, including wetlands, mudflats, rocky bottoms, eelgrass, and salt marsh. The different habitats support a diverse group of floral and faunal species such as phytoplankton, algae, and eelgrass; along with invertebrates such as mussels and lobsters, birds such as gulls and herons, and mammals such as raccoons and mink, to name a few.

The channel bottom/subtidal habitat is the bottom of the pelagic area and consists of both hard-bottom areas and fine-grained depositional areas. The hard-bottom areas occur where the river experiences tidal scouring and active erosion, such as in those areas offshore of PNS in the main flow of the Piscataqua River. The fine-grained depositional areas occur outside the main flow of the Piscataqua River, along the Back Channel, Jamaica Cove, and Clark Cove.

What is the size of OU4?

OU4 comprises the area offshore of PNS, represented by the 14 monitoring stations. The combined area of the monitoring stations is approximately 19 acres.

How much and what types of chemicals are present?

The **chemicals of concern (COCs)** detected in sediment samples collected at OU4 are discussed in this section. The discussion focuses on the monitoring stations, because most sediment samples were collected at these stations as part of the Interim Offshore Monitoring Program or other offshore investigations, and the COCs vary across the monitoring stations. Based on the interim offshore monitoring program results, **PAHs** and **metals** are the COCs in the offshore sediment.

The monitoring program showed that concentrations of COCs at MS-02, MS-05, MS-06, MS-07, MS-08, MS-09, MS-10, MS-13, and MS-14 were less than levels that indicate an ecological risk.

For MS-11, copper, lead, and nickel are the COCs that resulted from past erosion of soil from the OU2 shoreline. With the installation of shoreline erosion controls, erosion is no longer occurring along the OU2 shoreline. The offshore area of OU2 is rocky and there is a minimal amount of fine-grained sediment at MS-11; therefore, there is not sufficient sediment to cause ecological risk. In the one location where a small amount of sediment was found, concentrations of copper, lead, and nickel exceeded ecological risk levels in two to six of the seven sampling rounds prior to installation of the shoreline erosion controls. Concentrations of the COCs were less than ecological risk levels in the one round of sampling at MS-11 conducted after placement of the shoreline erosion controls (Round 11).

At MS-01, PAHs are the primary COCs and likely resulted from past erosion of ash from past operations at nearby Building 62 at OU9. Assuming an average sediment thickness of 2 feet, the volume of contaminated sediment with COCs at concentrations that present a potential ecological risk is about 1,800 cubic yards (yd^3).

For MS-03 and MS-04, the COCs are copper and PAHs, which are associated with past erosion of fill material located in the onshore area (OU7) adjacent to these monitoring stations. Assuming an average sediment thickness of 1 to 2 feet (depending on the area), the volume of contaminated sediment with COCs at concentrations that present a potential ecological risk is about 1,300 yd^3.

At MS-12, the COCs are lead and PAHs. One likely source of these chemicals is a former industrial waste outfall (Site 5) that reportedly discharged metals (including lead) and PAHs during previous operations. The discharges were discontinued by 1975. Therefore, there are no current IRP sources to MS-12. Other potential Navy sources of the elevated levels of lead and PAHs at MS-12 include: potential migration or transport from IRP sites, discharges from barges/boats, discharges from storm water outfalls located in the vicinity of the Shipyard, and dock-side activities. Based on the distribution of COCs, MS-12 was divided into MS-12A and MS-12B. MS-12A is located adjacent to Building 178 and includes a portion of Building 178 where water enters the building in the former boat bays. At MS-12A, assuming an average sediment thickness of 1.5 feet outside of Building 178, the volume of contaminated sediment with lead and PAHs at concentrations that present ecological risks is about 1,585 yd^3, while the volume of contaminated sediment inside Building 178 is about 150 yd^3, assuming an average sediment thickness of 0.2 feet. MS-12B is located offshore of a Site 5 outfall and only has lead contamination. At MS-12B, assuming an average sediment thickness of 0.5 feet, the volume of contaminated sediment with lead at concentrations that present an ecological risk is about 340 yd^3.

TECHNICAL TERMS USED THROUGHOUT THIS PROPOSED PLAN ARE EXPLAINED IN THE GLOSSARY OF TERMS ON PAGE 20

There are several potential non-Navy contaminant sources to the Piscataqua River offshore of PNS, especially sources of metals and petroleum products, because this area has a large amount of industry and urbanization. For example, potential sources include local industries, urban non-point source runoff, municipal water treatment discharges, and fuel or oil terminals. Petroleum products (e.g., fuel oil, diesel fuel, tar, etc.) and the incomplete combustion products of fuels from deposition on impervious industrial areas outside the Shipyard facility can be sources of metals and PAHs and may migrate offshore via sheet flow or storm sewers. Also, boat traffic in the river is a potential source of PAHs to the offshore area.

Scope and Role of the OU4 Response Action

OU4 is one of several operable units at PNS identified for assessment and cleanup under CERCLA. Each of these operable units is undergoing the CERCLA cleanup process independently of each other. The Proposed Plan for OU4 is not expected to have an impact on the strategy or progress of cleanup for the other sites at PNS. As these other sites (OU7, OU8, and OU9) progress through the cleanup process, Proposed Plans will be issued for these sites. Proposed Plans have already been prepared and RODs have been signed for OU1, OU2, and OU3.

Summary of Risks

As part of site investigation activities, the Navy completed human health and ecological risk assessments to evaluate current and future effects of chemicals detected at OU4 on human health and the environment. The results of these assessments are described below.

Human Health Risks

The **HHRA** evaluated potential exposure to contaminants in sediment and surface water across OU4. It did not evaluate risks individually at each AOC or monitoring station. The risk assessment was conducted in accordance with EPA guidance documents that were available at the time.

Based on the results of the HHRA, risks for ingestion of sediment, dermal contact with sediment, ingestion of surface water, and dermal contact with surface water were less than regulatory guidelines. Based on studies within the Piscataqua River, concentrations of chemicals in seafood causing potentially unacceptable risks around PNS were generally similar to or less than concentrations in background samples or in other coastal waters of Maine. Although the potential risks for ingestion of seafood around PNS exceeded regulatory guidelines, the Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Assessment (PHA) for PNS concluded that adults and children consuming fish or shellfish, or wading in the surface water and sediment are not likely to experience adverse health effects from the levels of chemical in those media. For these reasons, human health risks were found to be acceptable and human health was not considered in the FS. No monitoring station locations require remedial action based on human health risks.

To estimate the baseline risk for humans using the HHRA methodology, a four-step process was used.

Step 1 – Identify COPCs

COPCs are chemicals found at the site at concentrations greater than state and/or federal risk-based screening criteria and background levels. The COPCs were further evaluated in Steps 2 through 4 of the risk assessment.

Step 2 – Conduct an Exposure Assessment

In this step, ways that humans come into contact with sediment, surface water, and biota at OU4 are considered. Both current and reasonably foreseeable future exposure scenarios were identified. Human receptors evaluated at OU4 included recreational and subsistence fishermen exposed to chemicals in the surface water, sediment, and biota.

Step 3 – Complete a Toxicity Assessment

In this step, possible harmful effects from exposure to the individual COPCs are evaluated. Generally, these chemicals are separated into two groups: carcinogens (chemicals that may cause cancer) and non-carcinogens (chemicals that may cause adverse effects other than cancer).

Step 4 – Characterize the Risk

The results of Steps 2 and 3 were combined to estimate the overall risk from exposure to chemicals at OU4.

Ecological Risks

The primary objective of the ecological risk assessment was to evaluate whether ecological receptors are potentially at risk when exposed to chemicals at OU4. The **EERA** began with problem formulation. Detailed ecological studies were then conducted to evaluate chemical exposure levels and assess ecological effects in the estuary. Finally, risk characterization was conducted by evaluating data and information from the ecological studies for evidence of ecological risk.

Step 1 – Problem Formulation

Within problem formulation, contaminants of ecological concern, assessment endpoints, and exposure pathways were identified. A conceptual model describing how contaminants from PNS could affect ecological resources in the estuary was also developed in this step. Assessment endpoints are the components of the ecosystem that are to be protected in the study area. They represent the environmental processes or conditions that can be assessed to determine if there are

ecological impacts present. Assessment endpoints were identified by defining the COPCs, ecological effects, and the ecosystems at risk.

To relate exposure levels to potential effects and to the assessment endpoints for the EERA, receptors of concern (species or communities of species that can be evaluated at the site) in the Great Bay Estuary were identified for each assessment endpoint. Receptors of concern were selected to meet one or more of the following criteria: the importance of the receptor to the ecology of the estuary, its sensitivity to COPCs associated with the Shipyard, and its aesthetic, recreational, and/or commercial importance as a natural resource of the estuary. The receptors of concern were considered to be surrogate or indicator receptors for larger groups of species.

Step 2 – Risk Analysis

In this step, possible harmful effects from being exposed to the individual COPCs were evaluated. Two types of information are required to characterize ecological risk, data on the chemical exposure in environmental media (surface water and sediment), and data that relate exposure levels (dose) to measurable ecological effects. Measurements of COPC concentrations in water, sediment, and tissues of estuarine organisms, and measurements of the health and status of ecological receptors were conducted in the AOCs and in reference areas to evaluate ecological risk. Exposure and effect data obtained for each AOC were used to evaluate the potential impact from the Shipyard relative to other areas in the lower estuary. The COCs were identified from the COPCs as the chemicals that had an indication of being at harmful levels in the estuary.

Step 3 – Risk Characterization

In this step, the results of the risk analysis were analyzed to determine the likelihood of harmful effects to ecological receptors at OU4. Based on the risk characterization, the general conclusions were that the contaminants from onshore PNS sites were released to the offshore area by erosion, runoff, and groundwater discharge. Some contaminants were also directly discharged to these offshore locations. The primary receptors of concern for this offshore contamination are benthic invertebrates.

A weight-of-evidence approach was then used to evaluate measures of effect and measures of exposure to interpret the level of risk evident for each applicable assessment endpoint and AOC. No single measure alone is capable of determining whether there is risk or not; therefore, multiple lines of evidence were developed to characterize the magnitude of risk. Overall, the EERA did not detect severe impacts. Although there were indications of intermediate risk from sediment exposure in some AOCs, the assessment showed that most of the estuarine habitats around the Shipyard were healthy and productive.

Estuarine Ecological Risk Assessment for PNS

The **EERA** was completed to provide an assessment of the potential adverse environmental effects from past discharges of contaminants from PNS to the offshore environments of the Piscataqua River and Great Bay Estuary. The EERA was conducted in two phases. Phase I was to assess the environmental quality in the Great Bay Estuary, focusing on the lower Piscataqua River area in relation to PNS. Phase II, focused on the environment directly offshore of PNS, characterizing the ecological risk at each AOC offshore of PNS.

The primary studies conducted during Phase I and Phase II included: chemical and/or physical analysis of sediment and surface water, various biological community and population assessments and toxicity tests, and chemical analysis of biological samples.

The collective data and studies were then used to assess potential risks to the estuarine environment in the vicinity of PNS. A weight-of-evidence approach (comparing the strengths and weaknesses of the various measurement methods of exposure and effect) was used to characterize risk for each component of the ecosystem that may be impacted by site contaminants (i.e., assessment endpoints) at each AOC. Risk determinations for each assessment endpoint at each AOC were made using the results of the weight-of-evidence assessment. All AOCs had either low or intermediate ecological risk overall. No assessment endpoints showed high ecological risks. The ecological risks for each assessment endpoint were linked back to surface water and/or sediment exposure for chemicals that may have originated from onshore IRP sites [i.e., chemicals of potential concern (COPCs)]. The COPCs were identified as those chemicals more likely to exceed benchmark concentrations than ambient concentrations were likely to exceed benchmark concentrations, and could also be linked to an onshore IRP site.

The EERA concluded that risks to the assessment endpoints from chemicals in surface water were negligible to low; therefore, the Interim Offshore Monitoring Program only included the collection of sediment and biota samples. Based on the Interim Offshore Monitoring Program, the following chemicals were identified as the sediment COCs for OU4: copper, lead, nickel, acenaphthylene, anthracene, fluorene, and high molecular weight (HMW) PAHs.

Why is action needed at the site?

As a result of previous activities at OU4, copper, lead, nickel, and PAH concentrations in sediment at several monitoring stations are greater than levels that could result in risks to benthic invertebrates.

It is the current judgment of the Navy and EPA, in consultation with MEDEP, that the preferred alternatives, or one of the other active measures identified in this Proposed Plan, are necessary to protect public health and welfare from actual or threatened releases of these hazardous substances into the environment based on potential ecological risks.

Remedial Action Objectives

Remedial Action Objectives (RAOs) are the goals that a cleanup plan should achieve. They are established to protect human health and the environment, and comply with all pertinent federal and state regulations. The following RAO was developed for OU4 based on its current and reasonably anticipated future use:

- Eliminate unacceptable risk to ecological benthic receptors exposed to site-related COCs in suitable sediment habitats.

OU4 cleanup levels were developed in the FS for the sediment COCs (copper, lead, nickel, and PAHs) and are based on site-specific sediment and pore water toxicity tests. The proposed **cleanup levels** are listed in Table 1 and are based on average exposure.

TABLE 1 – OU4 Proposed Cleanup Levels

COC	Proposed Cleanup Level
Copper	486 parts per million (ppm)
Lead	436 ppm
Nickel	124 ppm
Acenaphthylene	210 parts per billion (ppb)
Anthracene	1,236 ppb
Fluorene	500 ppb
HMW PAHs	13,057 ppb

Summary of Remedial Alternatives

Remedial alternatives, or cleanup options, were identified in the OU4 FS to meet the RAO identified above. These alternatives are different combinations of plans to restrict access and to contain, remove, or treat contamination to protect the environment. As provided in the OU4 FS, no further action is required for MS-02, MS-05, MS-06, MS-07, MS-08, MS-09, MS-10, MS-13, and MS-14, because there are no current exceedances of the proposed cleanup levels that indicate an ecological risk. MS-11 does not have sufficient sediment to cause ecological risk; therefore, no further action is required for MS-11.

Alternatives for MS-01, MS-03, MS-04, and MS-12 were analyzed separately. Note that although the FS assumed that hydraulic dredging would be used to remove sediment, other forms of sediment removal, such as mechanical dredging, may be utilized for sediment removal alternatives, as determined by remedial action documents, if sediment excavation is part of the final remedies.

MS-01 Alternatives

- MS01-01 – No Action
- MS01-02 – Monitored Natural Recovery
- MS01-03 – Hydraulic Dredging with Off-yard Disposal

MS-03 and MS-04 Alternatives

- MS0304-01 – No Action
- MS0304-02 – Monitored Natural Recovery
- MS0304-03 – Hydraulic Dredging with Off-yard Disposal

MS-12A Alternatives

- MS12A-01 – No Action
- MS12A-02 – Containment, Land Use Controls (LUCs), and Monitoring
- MS12A-03–Partial Removal, Off-yard Disposal, Containment, and LUCs
- MS12A-04 – Complete Removal with Off-yard Disposal

MS-12B Alternatives

- MS12B-01 – No Action
- MS12B-02 – Monitored Natural Recovery
- MS12B-03 – Hydraulic Dredging with Off-yard Disposal

No Action Alternatives: MS01-01, MS0304-01, MS12A-01 and MS12B-01

"No action" alternatives, where no cleanup remedies would be applied at the site, were evaluated for each of the cleanup areas at OU4. This is required under CERCLA, and it serves as a baseline for comparison with other alternatives. The monitoring stations would be left as they are today under the no action alternatives.

MS-01 Alternatives

Monitored Natural Recovery

Alternative MS01-02 would consist of allowing naturally occurring processes to reduce ecological risks posed by the sediment COCs over time. Based on the location of MS-01, the naturally occurring contamination reduction processes

are limited to biodegradation and dispersion. With the onshore removal of the ash as part of OU9 remediation, contaminants will no longer be deposited in the MS-01 offshore area as a result of erosion. Furthermore, because of the nature of the currents within the limits of MS-01, it is not expected that contaminated sediment from other locations would settle out in this area. Sediment samples would be collected and analyzed in accordance with a long-term monitoring plan to provide the data needed for determining when concentrations are reduced to acceptable levels. LUCs would be implemented at this location to prevent unauthorized disturbance of sediment until concentrations of COCs are less than cleanup levels. Five-Year Reviews would be required under this alternative to evaluate the continued adequacy of the remedy.

Hydraulic Dredging with Off-Yard Disposal

Alternative MS01-03 would consist of complete removal and off-yard disposal of contaminated sediment from the offshore area of MS-01. High flow rates within the Piscataqua River may have shifted some of the sediments since the samples were collected; therefore, prior to removal, sampling would be conducted to verify the extent of contaminated sediment. Alternative MS01-03 would remove the contaminated sediment; therefore, LUCs, operation and maintenance (O&M), monitoring, inspections, and Five-Year Reviews would not be required. All dredged sediment would be dewatered, stockpiled, and characterized within the material handling area, then transported to an approved off-yard treatment, storage and disposal (TSD) facility.

MS-03 and MS-04 Alternatives

Monitored Natural Recovery

Alternative MS0304-02 would consist of allowing naturally occurring processes to reduce ecological risks posed by the sediment COCs over time. Based on the locations of MS-03 and MS-04, the naturally occurring contamination reduction processes are limited to biodegradation and dispersion. Shoreline stabilization has been completed at the onshore areas associated with these monitoring stations; therefore, contaminants will no longer be deposited in the MS-03/MS-04 offshore areas as a result of erosion. Sediment samples would be collected and analyzed In accordance with a long-term monitoring plan to provide the data needed for determining when concentrations are reduced to acceptable levels. LUCs would be implemented to prevent unauthorized disturbance of sediment until concentrations of COCs are less than cleanup levels. Five-Year Reviews would be required under this alternative to evaluate the continued adequacy of the remedy.

Hydraulic Dredging with Off-Yard Disposal

Alternative MS0304-03 would consist of complete removal and off-yard disposal of contaminated sediment from the offshore areas of MS-03 and MS-04. Prior to removal, sampling would be conducted to verify the extent of contamination. Alternative MS0304-03 would remove the contaminated sediment; therefore, LUCs, O&M, monitoring, inspections, and Five-Year Reviews would not be required. All dredged sediment would be dewatered, stockpiled, and characterized within the material handling area, then transported to an approved off-yard TSD facility.

MS-12A Alternatives

Containment, LUCs and Monitoring

Alternative MS12A-02 would consist of constructing a containment barrier to prevent contaminated sediment within Building 178 from migrating into the Piscataqua River, thus removing the ongoing source of contamination to the offshore habitats. LUCs, O&M, and inspections would be implemented to ensure the containment barrier continues to function as designed. Sediment sampling locations would be established to evaluate the COC concentrations found in the sediment on the boat ramp outside Building 178. Over time, source removal and naturally occurring processes, such as sediment deposition, would reduce the COC concentrations found in the sediment. Five-Year Reviews would be required under this alternative to evaluate the continued adequacy of the remedy.

Partial Removal, Off-Yard Disposal, Containment, and LUCs

Alternative MS12A-03 would consist of removing contaminated sediment from the offshore portion of MS-12A outside Building 178, and also constructing a containment barrier. All dredged sediment would be dewatered, stockpiled, and characterized within the material handling area, then transported to an approved off-yard TSD facility. Contaminated sediment would remain inside Building 178 and would not be addressed until the fate of the building is decided; therefore, sediment removal would only be partial. The barrier would be constructed to prevent sediment remaining inside Building 178 from migrating to the Piscataqua River. Lastly, this alternative includes LUCs for areas where contamination remains in place (within Building 178). Five-Year Reviews would be required under this alternative to evaluate the continued adequacy of the remedy.

Complete Removal with Off-Yard Disposal

Alternative MS12A-04 would consist of complete removal with off-yard disposal of contaminated sediment from the offshore and onshore (within Building 178) portions of MS-12A. Alternative M12A-04 would remove all contaminated sediment; therefore, LUCs, O&M, monitoring, inspections, and Five-Year Reviews would not be required. All removed sediment would be dewatered, stockpiled, and characterized within the material handling area, then transported to an approved off-yard TSD facility.

MS-12B Alternatives

Monitored Natural Recovery

Alternative MS12B-02 would consist of allowing naturally occurring processes to reduce the ecological risks posed by the sediment COCs over time. Based on the location of MS-12B, the naturally occurring contamination reduction processes are limited to dispersion. Although sedimentation modeling has not been completed for MS-12B, it is expected that contaminant concentration would begin to decrease if sediment is removed from MS-12A. Sediment samples would be collected and analyzed in accordance with a long-term monitoring plan to provide the data needed for determining when concentrations are reduced to acceptable levels. LUCs would be implemented to prevent unauthorized disturbance of sediment until concentrations of COCs are less than cleanup levels. Five-Year Reviews would be required under this alternative to evaluate the continued adequacy of the remedy.

Hydraulic Dredging with Off-Yard Disposal

Alternative MS12B-03 would consist of complete removal and off-yard disposal of contaminated sediment from the offshore area of MS-12B. Prior to removal, sampling would be conducted to verify the extent of contamination. Alternative MS12B-03 would remove contaminated sediment; therefore, LUCs, O&M, monitoring, inspections, and Five-Year Reviews would not be required. All dredged sediment would be dewatered, stockpiled, and characterized within the material handling area, and then transported to an approved off yard TSD facility.

Evaluation of Alternatives

EPA has established nine criteria for use in comparing the advantages/disadvantages of the cleanup alternatives. These criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. These nine criteria are explained in the text box, What are the Nine Evaluation Criteria?, below. A detailed analysis of the alternatives can be found in the FS. The evaluated alternatives are compared based on seven of the nine criteria for MS-01, MS-03/MS-04, MS-12A, and MS-12B in Tables 2 through 5. The two modifying criteria, State Agency and Community Acceptance, are evaluated following the public comment period.

What are the Nine Evaluation Criteria?

The following is a summary of the nine criteria used to evaluate the remedial alternatives. The first two criteria are considered threshold criteria, and any alternative selected must meet them. The next five criteria are balancing criteria. The last two (the modifying criteria), state (MEDEP) and community acceptance, will be addressed after the public comment period on this Proposed Plan.

1. ***Overall Protection of Human Health and the Environment*** determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

2. ***Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)*** evaluates whether an alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

3. ***Long-Term Effectiveness and Permanence*** considers the ability of an alternative to maintain protection of human health and the environment.

4. ***Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment*** evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5. ***Short-Term Effectiveness*** considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

6. ***Implementability*** considers the technical and administrative feasibility of implementing an alternative, including factors such as the relative availability of goods and services.

7. ***Cost*** includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. The alternative should provide the necessary protection for a reasonable cost. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

8. ***State/Support Agency Acceptance*** considers whether the state agrees with EPA's and Navy's analyses and recommendations, as described in the FS and Proposed Plan.

9. ***Community Acceptance*** considers whether the local community agrees with the Navy and EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

TECHNICAL TERMS USED THROUGHOUT THIS PROPOSED PLAN ARE EXPLAINED IN THE GLOSSARY OF TERMS ON PAGE 20

TABLE 2 COMPARISON OF MS-01 REMEDIAL ALTERNATIVES			
ALTERNATIVE	**MS01-01**	**MS01-02**	**MS01-03**
Estimated Time Frame (months)			
Designing and Constructing the Alternative	NA	12	15
Achieving the Cleanup Objectives	NA	24-48	15
Criteria Analysis			
Threshold Criteria			
Protects Human Health and the Environment ➢ Will it protect you and the animal life on and near the site?	○	●	●
Meets federal and state regulations ➢ Does the alternative meet federal and state environmental statutes, regulations, and requirements?	○	●	●
Primary Balancing Criteria			
Provides long-term effectiveness and is permanent ➢ Will the effects of the cleanup last?	○	◘	●
Reduces mobility, toxicity, and volume of contaminants through treatment ➢ Are the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present reduced?	○	○	○
Provides short-term protection ➢ How soon will the site risks be reduced? ➢ Are there hazards to workers, residents, or the environment that could occur during cleanup?	NA	◘	◘
Can it be implemented ➢ Is the alternative technically feasible? ➢ Are the goods and services necessary to implement the alternative readily available?	NA	●	◘
Cost ($) ➢ Upfront costs to design and construct the alternative (capital costs) ➢ Operating and maintaining any system associated with the alternative (O&M costs) ➢ Periodic costs associated with the alternative ➢ Total cost in today's dollars (**Net Present Worth [NPW]** cost)	$0	$17,094 capital 30-year NPW: $311,538	$917,661capital 30-year NPW: $917,661
Modifying Criteria			
State Agency Acceptance ➢ Does MEDEP agree with the Navy's recommendation?	To be determined after the public comment period		
Community Acceptance ➢ What objections, suggestions, or modifications does the public offer during the comment period?	To be determined after the public comment period		
Relative comparison of the Nine Balancing Criteria and each alternative: ● – Good, ◘ – Average, ○ – Poor, NA – not applicable			

TABLE 3 COMPARISON OF MS-03 AND MS-04 REMEDIAL ALTERNATIVES			
ALTERNATIVE	**MS0304-01**	**MS0304-02**	**MS0304-03**
Estimated Time Frame (months)			
Designing and Constructing the Alternative	NA	12	15
Achieving the Cleanup Objectives	NA	60-120	15
Criteria Analysis			
Threshold Criteria			
Protects Human Health and the Environment ➢ Will it protect you and the animal life on and near the site?	○	●	●
Meets federal and state regulations ➢ Does the alternative meet federal and state environmental statutes, regulations, and requirements?	○	●	●
Primary Balancing Criteria			
Provides long-term effectiveness and is permanent ➢ Will the effects of the cleanup last?	○	◘	●
Reduces mobility, toxicity, and volume of contaminants through treatment ➢ Are the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present reduced?	○	○	○
Provides short-term protection ➢ How soon will the site risks be reduced? ➢ Are there hazards to workers, residents, or the environment that could occur during cleanup?	NA	◘	◘
Can it be implemented ➢ Is the alternative technically feasible? ➢ Are the goods and services necessary to implement the alternative readily available?	NA	●	◘
Cost ($) ➢ Upfront costs to design and construct the alternative (capital costs) ➢ Operating and maintaining any system associated with the alternative (O&M costs) ➢ Periodic costs associated with the alternative ➢ Total cost in today's dollars (NPW cost)	$0	$17,904 capital 30-year NPW: $323,481	$745,410 capital 30-year NPW: $745,410
Modifying Criteria			
State Agency Acceptance ➢ Does MEDEP agree with the Navy's recommendation?	To be determined after the public comment period		
Community Acceptance ➢ What objections, suggestions, or modifications does the public offer during the comment period?	To be determined after the public comment period		
Relative comparison of the Nine Balancing Criteria and each alternative: ● – Good, ◘ – Average, ○ – Poor, NA – not applicable			

TABLE 4 COMPARISON OF MS-12A REMEDIAL ALTERNATIVES				
ALTERNATIVE	**MS12A-01**	**MS12A-02**	**MS12A-03**	**MS12A-04**
Estimated Time Frame (months)				
Designing and Constructing the Alternative	NA	13	15	15
Achieving the Cleanup Objectives	NA	60-120	15	15
Criteria Analysis				
Threshold Criteria				
Protects Human Health and the Environment ➢ Will it protect you and the animal life on and near the site?	○	●	●	●
Meets federal and state regulations ➢ Does the alternative meet federal and state environmental statutes, regulations, and requirements?	○	●	●	●
Primary Balancing Criteria				
Provides long-term effectiveness and is permanent ➢ Will the effects of the cleanup last?	○	◘	◘	●
Reduces mobility, toxicity, and volume of contaminants through treatment ➢ Are the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present reduced?	○	○	○	○
Provides short-term protection ➢ How soon will the site risks be reduced? ➢ Are there hazards to workers, residents, or the environment that could occur during cleanup?	NA	◘	●	●
Can it be implemented ➢ Is the alternative technically feasible? ➢ Are the goods and services necessary to implement the alternative readily available?	NA	●	◘	◘
Cost ($) ➢ Upfront costs to design and construct the alternative (capital costs) ➢ Operating and maintaining any system associated with the alternative (O&M costs) ➢ Periodic costs associated with the alternative ➢ Total cost in today's dollars (NPW cost)	$0	$369,626 capital 30-year NPW: $675,807	$1,305,682 capital 30-year NPW: $1,601,353	$1,134,478 capital 30-year NPW: $1,134,478
Modifying Criteria				
State Agency Acceptance ➢ Does MEDEP agree with the Navy's recommendation?	To be determined after the public comment period			
Community Acceptance ➢ What objections, suggestions, or modifications does the public offer during the comment period?	To be determined after the public comment period			
Relative comparison of the Nine Balancing Criteria and each alternative: ● – Good, ◘ – Average, ○ – Poor, NA – not applicable				

TABLE 5 COMPARISON OF MS-12B REMEDIAL ALTERNATIVES			
ALTERNATIVE	**MS12B-01**	**MS12B-02**	**MS12B-03**
Estimated Time Frame (months)			
Designing and Constructing the Alternative	NA	12	14
Achieving the Cleanup Objectives	NA	24-48	14
Criteria Analysis			
Threshold Criteria			
Protects Human Health and the Environment ➢ Will it protect you and the animal life on and near the site?	○	●	●
Meets federal and state regulations ➢ Does the alternative meet federal and state environmental statutes, regulations, and requirements?	○	●	●
Primary Balancing Criteria			
Provides long-term effectiveness and is permanent ➢ Will the effects of the cleanup last?	○	◘	●
Reduces mobility, toxicity, and volume of contaminants through treatment ➢ Are the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present reduced?	○	○	○
Provides short-term protection ➢ How soon will the site risks be reduced? ➢ Are there hazards to workers, residents, or the environment that could occur during cleanup?	NA	◘	◘
Can it be implemented ➢ Is the alternative technically feasible? ➢ Are the goods and services necessary to implement the alternative readily available?	NA	●	◘
Cost ($) ➢ Upfront costs to design and construct the alternative (capital costs) ➢ Operating and maintaining any system associated with the alternative (O&M costs) ➢ Periodic costs associated with the alternative ➢ Total cost in today's dollars (NPW cost)	$0	$17,094 capital 30-year NPW: $309,149	$428,824 capital 30-year NPW: $428,824
Modifying Criteria			
State Agency Acceptance ➢ Does MEDEP agree with the Navy's recommendation?	To be determined after the public comment period		
Community Acceptance ➢ What objections, suggestions, or modifications does the public offer during the comment period?	To be determined after the public comment period		
Relative comparison of the Nine Balancing Criteria and each alternative: ● – Good, ◘ – Average, ○ – Poor, NA – not applicable			

PREFERRED ALTERNATIVES

Based on information available at this time, the Navy recommends Alternatives MS01-03, MS0304-03, MS12A-04, and MS12B-03 to address contaminated sediment at OU4 and to provide long-term risk reduction. The Navy believes that these preferred alternatives meet the threshold criteria and provide the best balance of tradeoffs among the other alternatives with respect to the modifying criteria (Tables 2 through 5). The Interim Offshore Monitoring Program determined that there were no unacceptable risks at these monitoring stations; therefore, no further action is the preferred alternative for MS-02, MS-05, MS-06, MS-07, MS-08, MS-09, MS-10, MS-11, MS-13, and MS-14. The Navy proposes that the preferred alternatives be the final remedies for OU4.

The Navy expects the preferred alternatives to satisfy the following statutory requirements of CERCLA Section 121(b): (1) be protective of human health and the environment; (2) comply with **ARARs**; (3) be cost-effective; and (4) utilize permanent solutions to the maximum extent practicable. The Navy may decide to change its preferred alternatives in response to public comment or new information. After the end of the public comment period on this Proposed Plan, the Navy, with the concurrence of EPA and after consultation with MEDEP, will document its selected remedy in a ROD.

The Navy proposes removal of contaminated sediment to reduce concentrations of COCs for MS-01 (PAHs), MS-03 (copper), MS-04 (copper and PAHs), MS-12A (lead and PAHs), and MS-12B (lead) to cleanup levels (see Table 1 on Page 9) to meet the RAO. The Navy proposes to remove contamination such that LUCs, O&M, monitoring, inspection, and Five-Year Reviews would not be required as part of implementation of these remedies. The proposed MS-01, MS-03 and MS-04, MS-12A, and MS-12B alternatives (Figures 4, 5, 6, and 7) would include excavation of sediment at each monitoring station to a depth defined for each area to meet the RAO and cleanup levels, dewatering of excavated sediment, and disposal in an off-yard landfill. For MS-12A, the alternative would include excavation of offshore sediment (outside of Building 178) and within the intertidal area of Building 178 (see Figure 6). The remedial action documents would specify the requirements for dredging, dewatering, and disposal. Sampling would be conducted to make sure that contaminated sediment is removed such that the RAO and cleanup levels are met, and the remedial action documents would specify the requirements for sampling.

Alternatives MS01-03, MS0304-03, and MS12B-03 are preferred over the other alternatives for these monitoring stations because they provide the Navy's preferred balance between long-term effectiveness for current and planned future industrial use of the site, implementability, and cost. Alternatives MS01-03, MS0304-03, and MS12B-03 would remove contaminated sediment at each respective monitoring station and prevent potential exposure to ecological receptors, rather than relying on natural attenuation to gradually decrease COC concentrations, as provided under Alternatives MS01-02, MS0304-02, and MS12B-02. The additional cost of Alternatives MS01-03, MS0304-03, and MS12B-03, as compared to the costs of MS01-02, MS0304-02, and MS12B-02, are warranted because of the significantly greater protection they provide in the long-term. It is anticipated that Alternatives MS01-03, MS0304-03, and MS12B-03 would achieve cleanup goals a year or more before the respective alternatives MS01-02, MS0304-02, and MS12B-02.

Alternative MS12A-04 is preferred over the other alternatives because it provides the Navy's preferred balance between long-term effectiveness for current and planned uses of the monitoring station, implementability, and cost. Alternative MS12A-04 would remove contaminated sediment from the monitoring station and prevent potential exposure to ecological receptors, rather than relying on natural attenuation to gradually decrease COC concentrations. The removal of sediment would also prevent any future migration of contaminated sediment from the intertidal area inside Building 178 to the offshore area without the need for placement and long-term O&M of a containment barrier. Alternative MS12A-02 would not include any direct removal of contamination, and would rely on natural processes to gradually decrease COC concentrations. It is anticipated that Alternatives MS12A-03 and MS12A-04 would achieve cleanup goals a year or more before Alternative MS12A-02. Alternative MS12A-04 requires a significantly greater cost than Alternative MS12A-02, and a slightly lesser cost than Alternative MS12A-03.

Overall, the Navy prefers excavation of contaminated sediment over the monitored natural recovery alternative because excavation will actively reduce concentrations in the offshore sediment to less than cleanup levels in a shorter time with greater confidence in achievement of the RAO. Onshore removal actions have been conducted to eliminate the sources of contamination to the offshore from IRP sites and reduction in concentrations of COCs at the various monitoring stations has been observed over the course of the interim offshore monitoring program. However, residual concentrations of COCs in sediment in portions of these four monitoring stations remain at levels that are a potential ecological risk. Excavation of contaminated sediment to meet cleanup levels at MS-01, MS-03, MS-04, and MS-12, and no further action for MS-02, MS-05, MS-06, MS-07, MS-08, MS-09, MS-10, MS-11, MS-13, and MS-14 would result in no further risks associated with Site 5 and the OU4 AOCs, thereby resulting in unlimited use and unrestricted exposure for OU4 and removal of OU4 from the IRP. With the implementation of the final remedies for OU4, interim offshore monitoring will be discontinued.

Figure 4 - Alternative MS01-03 - Dredging with Off-Yard Disposal

PGH P:\GIS\PORTSMOUTH_NSY\MAPDOCS\MXD\MONITORING SITE MAPS\MS-01_ALT_4_2012_NTB.MXD 1/30/2013 JEE

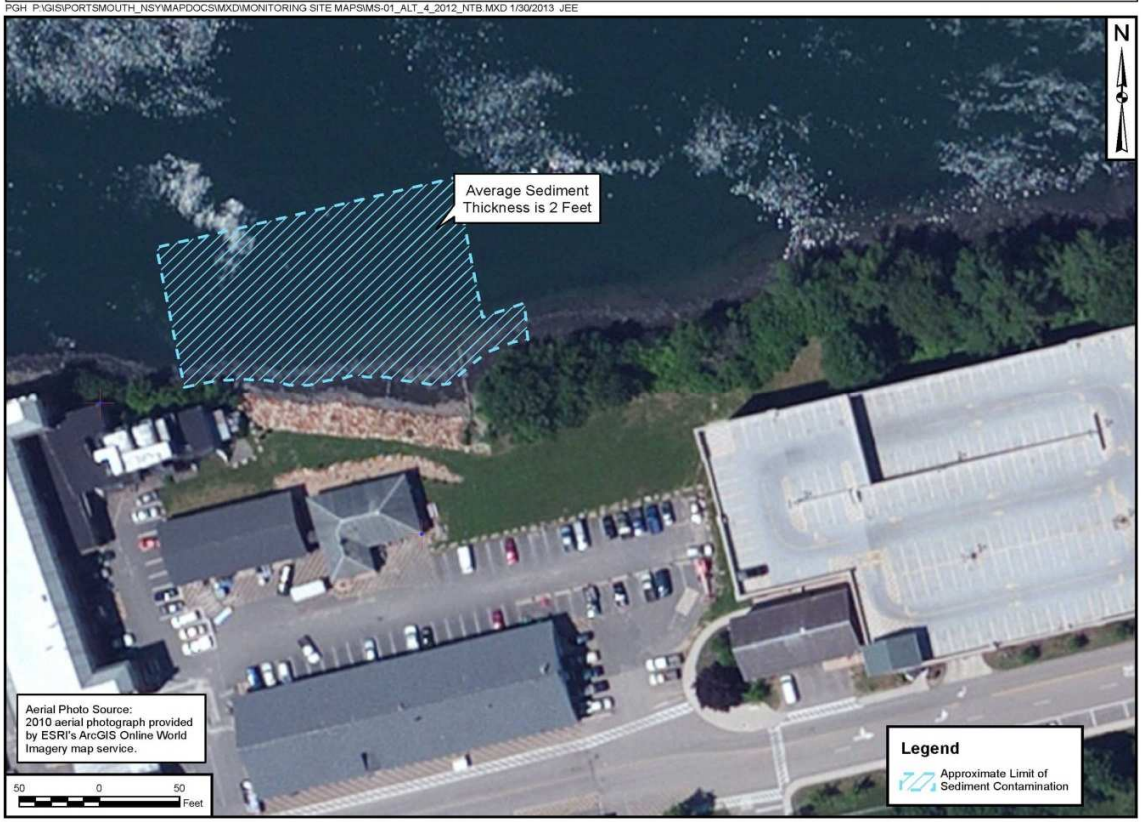

Figure 5 - Alternative MS0304-03 - Dredging with Off-Yard Disposal

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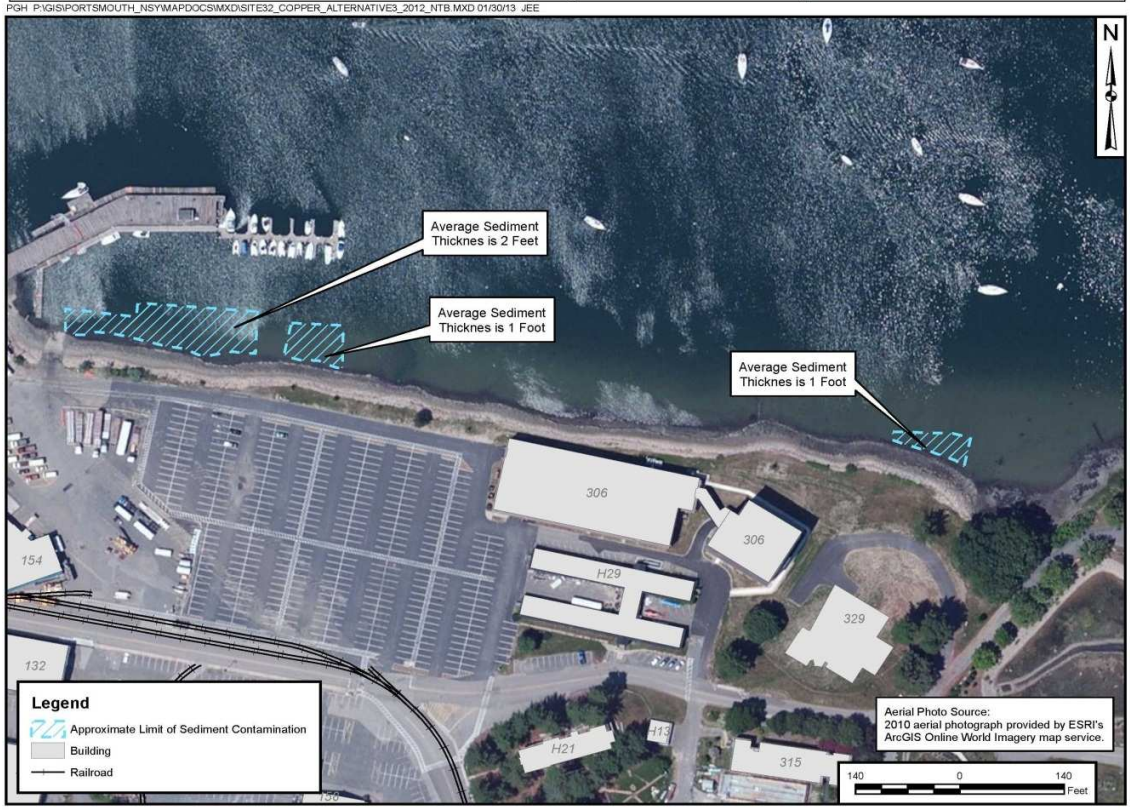

Figure 6 - Alternative MS12A-04 - Complete Removal and Off-Yard Disposal

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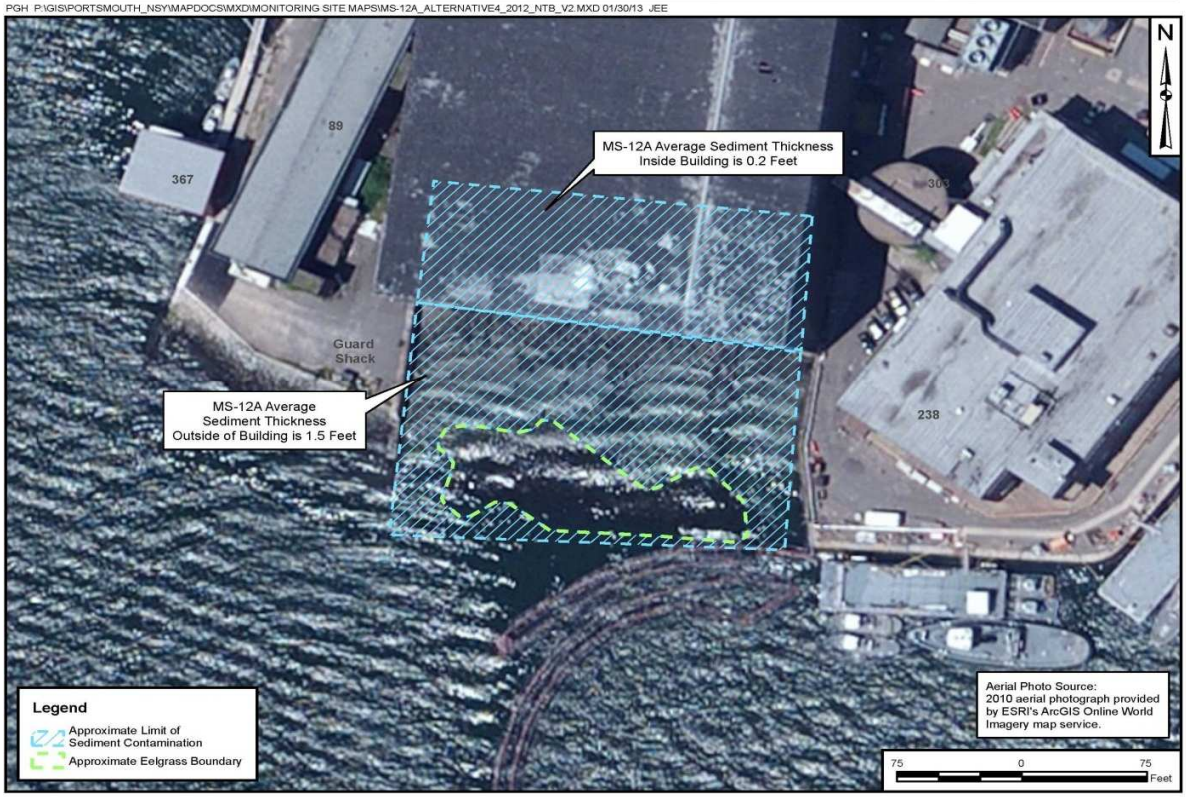

Figure 7 - Alternative MS12B-03 - Dredging with Off-Yard Disposal

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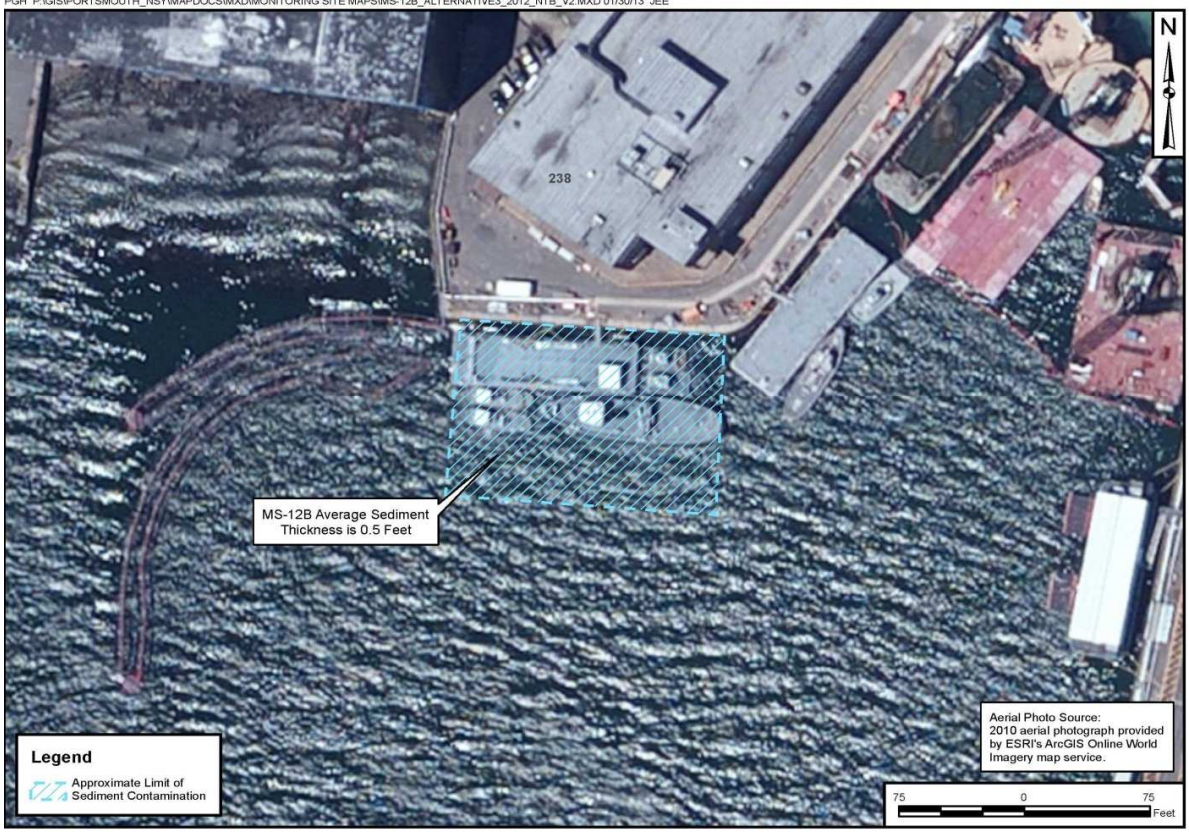

FIVE-YEAR REVIEW REQUIREMENTS

Contamination would not remain at OU4 in excess of levels that allow for unlimited use and unrestricted exposure; therefore, reviews of the remedy protectiveness would not be needed every 5 years.

COMMUNITY PARTICIPATION

The public is encouraged to participate in the decision-making process for the cleanup of OU4 by reviewing and commenting on this Proposed Plan during the public comment period, which is February 27 to March 28, 2013.

What Do You Think?

You do not have to be a technical expert to comment. If you have a comment, the Navy would like to hear it before beginning the cleanup.

What is a Formal Comment?

Federal regulations make a distinction between "formal" comments received during the 30-day comment period and "informal" comments received outside this comment period. Although the Navy uses comments throughout the cleanup process to help make cleanup decisions, it is required to respond to formal comments.

Your formal comments will become part of the official record for OU4. This is a crucial element in the decision-making process for the site.

The Navy will consider all significant comments received during the comment period prior to making the final cleanup decision for the site. Written comments will be included in the Responsiveness Summary contained in the ROD.

Formal comments can be made in writing or made orally. To make a formal comment on the Proposed Plan, you may:

- Offer oral comments during the public hearing on March 13, 2013.
- Provide written comments at the informational open house, public hearing, or by fax or mail. Comments must be postmarked no later than March 28, 2013.

A tear-off mailer is provided as part of this document for your convenience.

NEXT STEPS

The Navy will consider and address all significant public comments received during the comment period. The responses to comments will be included in the Responsiveness Summary in the ROD, which will document the final CERCLA remedies selected by the Navy and EPA, in consultation with MEDEP, for OU4. After the ROD is signed, it will be made available to the public on the public website and at the Information Repositories.

To Comment Formally:

Send Written Comments postmarked no later than March 28, 2013 to:

Ms. Danna Eddy
Public Affairs Office (Code 100PAO)
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

Fax Comments by March 28, 2013, to the attention of:

Ms. Danna Eddy
Public Affairs Office (Code 100PAO)
Portsmouth Naval Shipyard
Fax: (207) 438-1266

For More Detailed Information You May Go to the Public Information Repository or Public Website

The Proposed Plan was prepared to help the public understand and comment on the preferred cleanup alternatives for OU4 and provides a summary of a number of reports and studies.

Information Repositories

Rice Public Library
8 Wentworth Street
Kittery, Maine 03904
Telephone: (207) 439-1553

Portsmouth Public Library
175 Parrott Avenue
Portsmouth, New Hampshire 03801
Telephone: (603) 427-1540

Public Website
http://go.usa.gov/vvb

GLOSSARY OF TERMS

This glossary defines the bolded terms used in this Proposed Plan. The definitions in this glossary apply specifically to this Proposed Plan and may have other meanings when used in different circumstances.

Applicable or Relevant and Appropriate Requirements (ARARs): The federal, state, and local environmental rules, regulations, and criteria that must be met by the selected cleanup action under CERCLA.

Assessment Endpoint: An assessment is a component of the ecosystem that may be impacted by the stressors of concern, has ecological and societal value, and represents a component of the ecosystem that can be protected.

Chemical of Concern (COC): Chemicals of potential concern that through further evaluation in human health and screening-level ecological risk assessment are determined to present a potential adverse effect on human and ecological health and the environment.

Cleanup Level: A numerical concentration agreed upon by the Navy and EPA, in consultation with MEDEP, as having to be reached for a certain COC to meet one or more of the RAOs. A cleanup level may be a regulatory-based criterion, a risk-based concentration, or even a background value.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law also known as "Superfund." This law was passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Estuarine Ecological Risk Assessment (EERA): An evaluation of current and future potential for adverse effects on ecological receptors in an estuary from exposure to site contaminants.

Feasibility Study (FS): A report that presents the description and analysis or evaluation of potential cleanup alternatives for a site. The report also provides other remedial options screened out in the Feasibility Study that were not considered to be applicable for the site conditions.

Human Health Risk Assessment: An evaluation of current and future potential for adverse human health effects from exposure to site contaminants.

Metals: Metals are naturally occurring elements. Some metals, such as arsenic and mercury, can have toxic effects. Other metals, such as iron, are essential to the metabolism of humans. Metals are classified as inorganic because they are a mineral, and not of biological origin.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): More commonly called the National Contingency Plan, it is the federal government's blueprint for responding to both oil spills and hazardous substance releases. Following the passage of Superfund (CERCLA) legislation in 1980, the NCP was broadened to cover releases at hazardous waste sites requiring emergency removal actions. A key provision involves authorizing the lead agency to initiate appropriate removal action in the event of a hazardous substance release.

Net Present Worth (NPW): A costing technique that expresses the total of initial capital expenditure and long-term operation and maintenance costs in terms of present day dollars.

Polycyclic aromatic hydrocarbons (PAHs): High molecular weight, relatively immobile, and moderately toxic solid organic chemicals that feature multiple benzenic (aromatic) rings in their chemical formula. PAHs are normally formed during the incomplete combustion of coal, oil, gas, garbage, or other organic substances. High molecular weight (HMW) PAHs are made up of four to seven aromatic rings. These PAHs are generally less toxic to aquatic organisms than low molecular weight (LMW) PAHs, but some are still known carcinogens.

Record of Decision (ROD): An official document that describes the selected cleanup action for a specific site. The ROD documents the cleanup selection process and is issued by the Navy following the public comment period.

Remedial Action Objective (RAO): A cleanup objective agreed upon by the Navy and EPA, in consultation with MEDEP. One or more RAOs are typically formulated for each environmental site.

Remedial Investigation (RI) or Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund or RCRA site, establish site cleanup criteria, identify preliminary alternatives for remedial action, and support technical and cost analyses of alternatives.

Use This Space to Write Your Comments

Your input on the Proposed Plan for contamination at OU4 at Portsmouth Naval Shipyard is important to the Navy, EPA, and MEDEP. Comments provided by the public are valuable in helping to select the remedy for this site.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by March 28, 2013. Comments can be submitted via mail or fax and should be sent to the following address:

Ms. Danna Eddy
Public Affairs Office (Code 100PAO)
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

Fax: (207) 438-1266

Name:	
Address:	
City:	
State:	Zip Code:
Telephone:	

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PLACE
STAMP
HERE

Ms. Danna Eddy

Public Affairs Office (Code 100PAO)

Portsmouth Naval Shipyard

Portsmouth, NH 03804-5000